In the Claims:

Please amend the claims as set forth in the following Listing of the Claims.

LISTING OF THE CLAIMS

Please cancel claims 1-58 and 70-117.

Claims 1- 58 (Cancelled)

59. (Previously Presented)   A method of assaying for a pathogen in a sample, said method comprising:

exciting said sample with radiation, said sample comprising

at least one pathogen;

at least one probe, and

at least one fluorescent tag;

measuring the fluorescence from a subvolume of said excited sample; and

analyzing the fluctuations of said fluorescence that are due to the diffusion or flow of said pathogen through said subvolume.

60. (Currently Amended)   A method of assaying for the presence of a pathogen in a sample, said method comprising:

exciting said sample with radiation, said sample comprising

at least one probe capable of binding a predetermined pathogen, and

at least one first fluorescent tag;

measuring the fluorescence from a subvolume of said excited sample;

analyzing the fluctuations of said fluorescence that are due to the diffusion or flow of said pathogen, when present, through said subvolume; and

determining the presence or absence of said pathogen.

61. (Original)   The method of claim 60, further comprising identifying said pathogen.

62. (Previously Presented)   The method of claim 60, wherein said sample comprises a plurality of unique fluorescently tagged probes, each unique probe comprising a unique fluorophore, each unique probe being capable of binding to a unique pathogen.

63. (Original) The method of claim 60, wherein said sample further comprises a second fluorescent tag comprising a fluorophore different from the fluorophore of said first fluorescent tag.

64. (Original) The method of claim 60, wherein said analyzing comprises at least one of determining the crosscorrelation function of said sample and determining the autocorrelation function of said sample.

65. (Previously presented)   The method of claim 60, wherein said pathogen comprises a bacterium.

66. (Previously presented)   The method of claim 60, wherein said pathogen comprises a virus.

67. (Cancelled)

68. (Currently Amended)   The method of claim 60, wherein said pathogen comprises a pathogen spore [[,]].

69. (Cancelled)

Claims 70-117 (Cancelled)

118. (Previously presented)   The method of claim 59, wherein said sample comprises a plurality of unique fluorescently tagged probes, each unique probe

4

comprising a unique fluorophore, each unique probe being capable of binding to a unique pathogen

119. (Previously presented)   The method of claim 59, wherein further comprising determining the crosscorrelation function of said pathogen.

120. (Previously presented)   The method of claim 59, wherein the probe comprises multiple binding sites for binding the pathogen.

121. (Previously presented)   The method of claim 59, wherein the pathogen comprises multiple binding sites for binding the probe.

122. (Previously presented)   The method of claim 60, further comprising determining the crosscorrelation function of said pathogen.

123. (Previously presented)   The method of claim 60, wherein the probe comprises multiple binding sites for binding the predetermined pathogen.

124. (Previously presented)   The method of claim 59 further comprising obtaining a measured correlation function of the pathogen and applying a correction algorithm to the measured correlation function.

125. (Previously presented)   The method of claim 124, wherein the measured correlation function comprises an autocorrelation function and a crosscorrelation function.

126. (Previously presented)   The method of claim 124, wherein the correction algorithm adjusts the measured correlation function based on a bleed through coefficient.

127. (Previously presented)   The method of claim 60 further comprising obtaining a measured correlation function of said pathogen and applying a correction algorithm to the measured correlation function.

128. (Previously presented)   The method of claim 127, wherein the measured correlation function comprises an autocorrelation function and a crosscorrelation function.

129. (Previously presented)   The method of claim 127, wherein the correction algorithm adjusts the measured correlation function based on a bleed through coefficient.

130. (Previously presented)   The method of claim 59, wherein said pathogen comprises at least one of a bacterium and a virus.

131. (Previously presented)   The method of claim 59, wherein the identity of said pathogen is unknown.

132. (Previously presented)   The method of claim 59, wherein said analyzing occurs over a period of seconds.

133. (Previously presented)   The method of claim 60, wherein said analyzing occurs over a period of seconds.

134. (Previously presented)   The method of claim 59, wherein said analyzing occurs over a period of at least 15 seconds.

135. (Previously presented)   The method of claim 60, wherein said analyzing occurs over a period of at least 15 seconds.

136. (Previously presented)   The method of claim 59, wherein said analyzing occurs over a period of at least 30 seconds.

137. (Previously presented)   The method of claim 60, wherein said analyzing occurs over a period of at least 30 seconds.

138. (Previously presented)   A method of assaying for the presence of a pathogen in a sample, said method comprising:

exciting said sample with radiation, said sample comprising a plurality of unique fluorescently tagged probes, each unique probe comprising a unique fluorophore, each unique probe being capable of binding to a unique pathogen; and

measuring the fluorescence from a subvolume of said excited sample;

analyzing the fluctuations of said fluorescence; and

determining the presence or absence of at least one pathogen.